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SVWQC

May 20, 2014

Pamela Creedon, Executive Director
Central Valley Regional Water Quality Control Board
10200 Sun Center Drive, Suite 200
Rancho Cordova, CA 95670-6114

Dear Pamela:

The Sacramento Valley Water Quality Coalition (SVWQC) and Butte Yuba Sutter Subwatershed respectfully request your determination that the chlorpyrifos Management Plan for the Lower Snake River be deemed complete. The primary basis for this request is that the Lower Snake River has been determined to meet the Water Quality Objective (WQO) for chlorpyrifos. Additional factors supporting the request include the extensive outreach conducted in the subwatershed and pursuit and award of grant funding to further augment and expand implementation of management practices to control discharges of chlorpyrifos and other agricultural pesticides.

BACKGROUND FOR MANAGEMENT PLAN REQUIREMENT

The Lower Snake River at Nuestro Road (LSNKR) monitoring location is a representative monitoring sites in the Wadsworth drainage on the Lower Snake River. This site represents the Lower Snake River, Wadsworth, Butte Creek, Cherokee Canal, Lower Oroville, Gilsizer, and Sutter drainages in the Butte-Yuba-Sutter subwatershed of the Sacramento Valley Water Quality Coalition. The management plan requirement for chlorpyrifos was triggered by two exceedances observed in July and August of 2008. One of these exceedances (August 2008) was also identified as the likely cause of toxicity to *Ceriodaphnia* observed in the same sample.

DATA AND EXCEEDANCES

Relevant monitoring data for the chlorpyrifos management plan are provided in Table 1. These results indicate the following:

- A total of 40 sample events have been conducted for chlorpyrifos in Lower Snake River. There have been only two (2) exceedances, observed in consecutive months in 2008.

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- Sampling in 2010-2013 was conducted during the same high-use periods (July-September) when the exceedances were previously observed. A total of 28 sample events for chlorpyrifos have been conducted since the last exceedance in August 2008 with no exceedances and 2 detections of chlorpyrifos above the reporting limit.
- In 23 sample events since the 2008 exceedance, there was a single *Ceriodaphnia* toxicity exceedance observed (August 2011) which was not associated with chlorpyrifos.

Monitoring for chlorpyrifos in Lower Snake River continues as part of the compliance monitoring required for the chlorpyrifos/diazinon TMDL.

SUMMARY OF EVALUATIONS SUPPORTING REQUEST

The following evaluations and factors support this request:

Assessment of Compliance with Water Quality Objectives	No exceedances of the water quality objective for chlorpyrifos have occurred in the 28 samples collected since August 2008.
Outreach	Direct contact with 29 chlorpyrifos users (2007-2011) in the Lower Snake River drainage 5 workshops focused on irrigation management to eliminate or minimize controllable chlorpyrifos discharges in tailwater. Direct individual contacts with 53 producers representing 2454 acres, to promote irrigation management.
Implemented practices	High degree of awareness and implementation of practices to control chlorpyrifos discharges and runoff
Additional planned implementation	Implementation of significant additional management practices to convert flood irrigation, minimize irrigation tailwater runoff, and other practices that minimize risk of chlorpyrifos discharges was initiated in 2012 and will continue in 2013 (supported by Bay Delta Initiative funding)

SOURCE EVALUATIONS

A source evaluation of the potential causes of the chlorpyrifos exceedances observed in Lower Snake River was completed and submitted in July 2011[1]. The source evaluation assessed the chlorpyrifos applications by agriculture, which crops applied chlorpyrifos prior to exceedances, irrigation patterns and methods, and environmental conditions relevant to potential discharges of chlorpyrifos, and potential non-agricultural sources of chlorpyrifos. The conclusions of the evaluations were as follows:

[1] *Source Evaluation Report: Chlorpyrifos in Lower Snake River.* Prepared by Larry Walker Associates for the Sacramento Valley Water Quality Coalition. July 2011.

- Based on evaluations of reported pesticide applications and predominant crops in the drainage, agriculture was a likely source of the chlorpyrifos exceedances. Based on this finding, Coalition members farming on identified high-priority parcels in the drainage were surveyed for crop type, pesticide use, and management practice implementation. Practices relevant to the method and timing of chlorpyrifos applications during irrigation season were the focus of the survey.
- Walnuts account for the majority of agricultural applications relevant to the observed exceedances, with much lesser amounts used by almonds, prunes, peaches, and pecans.
- The Lower Snake River drainage also contains some urban and rural residential acreage that represents a potential non-agricultural source of chlorpyrifos in the drainage. However, changes in the retail availability of chlorpyrifos are expected to have substantially reduced the potential for contributions from this source. Other non-agricultural sources (rights-of-way, public health, landscape maintenance) were considered unlikely to have contributed to the exceedances.

Based on a review of currently available pesticide use information for 2002 – 2012, the use of chlorpyrifos has not changed substantially or shown a consistent long-term trend in the Wadsworth drainage of the Lower Snake River (Figure 1) or the other drainages represented by the Lower Snake River site (Figure 2). Use on walnuts during summer irrigation season remains the primary use of chlorpyrifos in the drainage. The timing of use and the majority of use on orchard crops (primarily on walnuts and other orchard crops during irrigation season) limits the potential for chlorpyrifos discharges to surface waters. The primary pathways of transport are irrigation tailwater discharges and drift from applications, and managing these has been the focus of outreach to control chlorpyrifos exceedances.

OUTREACH AND EDUCATION

Outreach conducted for the management plan since 2008

Growers (29) who reported applying chlorpyrifos in the Lower Snake River drainage from 2007 to 2011 were directly contacted (by phone) in March 2012 to inform them of the chlorpyrifos management plan, and to survey the growers for their current and planned management practice implementation. During the calls, the previous chlorpyrifos exceedances and management practices to minimize the risk of future exceedances were discussed with the growers.

Throughout Sutter and Yuba Counties, the Sutter County Resource Conservation District (RCD) has done extensive outreach and education on irrigation water management. Minimizing overwatering and tailwater runoff are a key part of the management practices needed to eliminate chlorpyrifos exceedances from orchards during irrigation season. In 2011 and 2012, the RCD hosted 5 workshops on irrigation water management and in summer and fall of 2012 RCD staff individually visited 53 producers, representing 2,454.4 acres, to assist with proper irrigation water management.

MANAGEMENT PRACTICES

Through the Bay Delta Initiative, a special allocation of funding was secured for EQIP projects for the Lower Snake River Watershed in Sutter County. In 2012 (the first year of funding) 21 contracts, representing 895 acres, were funded. For these contracts, producers convert flood irrigation systems to solid-set sprinkler or micro-drip/sprinkler systems. There are also a variety of additional conservation practices producers can choose to do under these contracts, including (but not limited to) cover crops, nutrient management, pest management, and irrigation water management. Irrigation water management is required as a condition of the contract.

SURVEYS

The 29 growers in the drainage that had applied chlorpyrifos from 2007 - 2011 were surveyed for implementation of relevant practices in March 2012, and responses were collected from all of the growers. For these 29 growers, 28 respondents reported managing a total of 1607 acres (one grower didn't report acreage). The reported acreage is dominated by orchard crops, with walnuts, almonds, and plum comprising 76% of the acreage. Alfalfa (1.5%) and "other" crops (~23%) comprised the remaining acreage of those that applied chlorpyrifos. Sixteen of the responding growers (in order of most to least acreage: walnuts, other, plums, almonds) reported using chlorpyrifos in the 12 months before the survey, and 12 additional growers reported using it in the previous year. One grower reported applying no chlorpyrifos in the previous two years.

Of the 28 growers that applied chlorpyrifos in the last 2 years:

- 100% Use air blast applications if wind between 3-10 mph/upwind of sensitive site
- 100% adjust spray nozzles to match crop canopy profile
- 100% shutoff outside nozzles when spraying outer rows next to sensitive sites
- 100% spray equipment calibrated prior to each application
- 100% reported that they, their farm manager, and/or employees annually attended an Agricultural Commissioner training.
- 96% (27 of 28) reported using spray application best management practices in their agricultural operations for more than 2 years, and 57% have used these practices for more than 5 years.
- 82% (23/28) reported implementing additional management practices in the last 2 years to address a pesticide-related water quality issue.
- 96% (27/28) use winter vegetation (cover crops, etc.) to increase infiltration and reduce winter runoff

The findings of the surveys conducted for the management plan are consistent with the lack of observed chlorpyrifos exceedances in recent years. Although chlorpyrifos is still being applied, the degree of management practice implementation is very high. This high degree of management practice implementation has controlled discharges of chlorpyrifos and appears to be sufficient to prevent additional exceedances.

CONCLUSIONS

Based on the monitoring results discussed above, the Lower Snake River is meeting the Central Valley Basin Plan water quality objective for chlorpyrifos. This is due primarily to the extensive outreach and education efforts conducted within the drainages represented by the Lower Snake River monitoring. Additionally, grants funded by the Bay Delta Initiative have been awarded to augment management practices in the represented drainages that will further reduce the risk of chlorpyrifos discharges and exceedances in regional surface waters.
As specified in the SVWQC's Criteria for Completion of a Management Plan, we respectfully request that you make a determination of the completeness of this management plan.

Sincerely,

David J. Guy
President
Northern California Water Association

Cc: Joe Karkoski
Susan Fregien
Mark Cady
Larry Lloyd
Juleah Cordi
Bruce Houdesheldt
Claus Suverkropp

TABLES

Table 1. Monitoring Results for Chlorpyrifos and *Ceriodaphnia*

EventID	Sample Date	Chlorpyrifos, µg/L	*Ceriodaphnia*, percent survival
17	10-Feb-07	ND (<0.001)	100
19	18-Apr-07	ND	100
20	16-May-07	ND	100
21	19-Jun-07	ND	85
22	18-Jul-07	ND	93.3
23	22-Aug-07	ND	105.3
24	18-Sep-07	ND	95
25	20-Dec-07	ND	100
26	29-Jan-08	0.004	100
27	22-Feb-08	ND	100
28	22-Apr-08	ND	100
29	20-May-08	—	95
	21-May-08	ND	—
30	18-Jun-08	ND	100
31	15-Jul-08	0.0323	100
32	19-Aug-08	0.0343	60
32.1	27-Aug-08	—	100
33	16-Sep-08	ND	100
33.1	23-Sep-08	—	100
54	18-Aug-10	ND	—
55	22-Sep-10	ND	—
59	18-Jan-11	ND	100
61	16-Mar-11	ND	100
62	21-Apr-11	ND	100
63	17-May-11	ND	100
64	21-Jun-11	ND	95
65	19-Jul-11	ND	100
66	16-Aug-11	ND	10
67	21-Sep-11	0.0037	100
68	19-Oct-11	ND	—
71	24-Jan-12	ND	—
72	23-Feb-12	ND	—
73	15-Mar-12	ND	—
75	15-May-12	ND	105
76	20-Jun-12	ND	94.4
77	18-Jul-12	0.0024	100
78	22-Aug-12	ND	100
79	19-Sep-12	—	105

EventID	Sample Date	Chlorpyrifos, µg/L	*Ceriodaphnia*, percent survival
83	22-Jan-13	ND	—
84	21-Feb-13	ND	—
85	20-Mar-13	ND	—
87	21-May-13	ND	100
88	18-Jun-13	ND	105
89	17-Jul-13	0.0018 DNQ	100
90	20-Aug-13	0.0019 DNQ	100
91	18-Sep-13	0.0007 DNQ	136
95	14-Jan-14	ND	105
98	17-Apr-14	—	100

Exceedances of ILRP trigger limits are highlighted in yellow
"—" indicates analyte was not sampled

Figure 1. Annual chlorpyrifos use by agriculture in the Wadsworth drainage of the Lower Snake River.

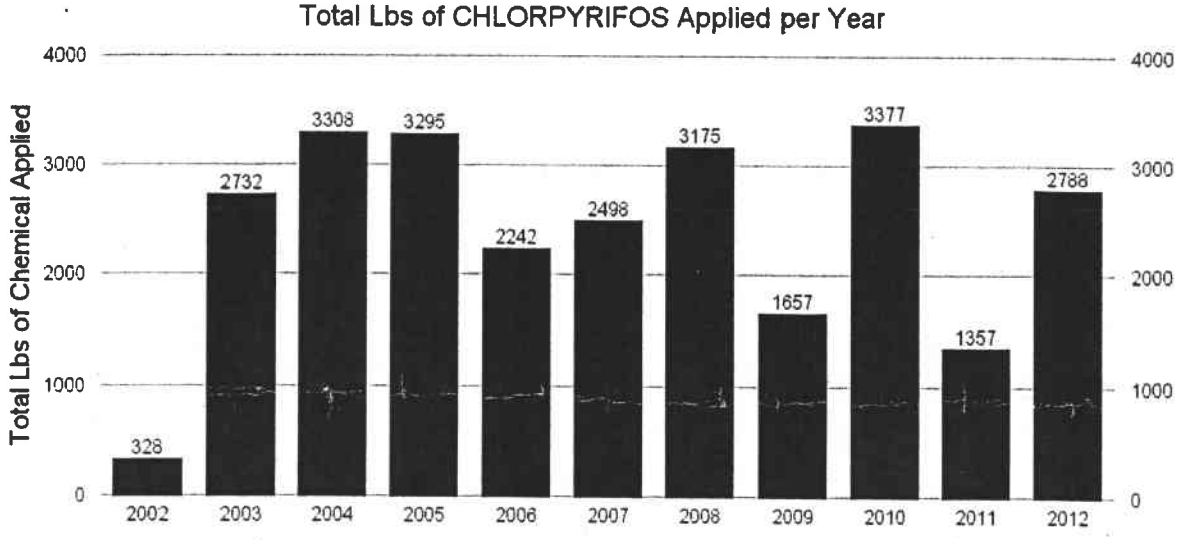

Figure 2. Annual chlorpyrifos use by agriculture in the drainages represented by Lower Snake River.